

187532196

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Patent Claims

1. An optoelectronic sensor for demodulating a modulated  
photon flux (50) having  
5 a semiconductor region (10),  
at least two collecting zones (20, 22) present in the  
semiconductor region (10) and serving for collecting  
and tapping off minority carriers (11) generated when  
a modulated photon flux (50) penetrates into the  
10 semiconductor region (10), the collecting zones (20,  
22) being doped inversely with respect to the  
semiconductor region (10),  
characterized by  
at least two control zones (32, 34) introduced in the  
15 semiconductor region (10) and serving for generating a  
drift field in a manner dependent on a control voltage  
that can be applied to the control zones (32, 34), the  
control zones (32, 34) being of the same doping type  
as the semiconductor region (10).  
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2. The optoelectronic sensor as claimed in claim 1,  
wherein  
the semiconductor region (10) is situated above or in  
a semiconductor substrate (12), which is doped more  
25 highly than the semiconductor region (10).
3. The optoelectronic sensor as claimed in claim 1,  
wherein  
the semiconductor region (10) is applied on a  
30 dielectric (12).

4. The optoelectronic sensor as claimed in one of claims  
1 to 3,  
wherein  
5 the control zones (32, 34) are at a greater distance  
from the midpoint of the sensor than the collecting  
zones (20, 22).
- 10 5. The optoelectronic sensor as claimed in one of claims  
1 to 4,  
wherein  
the semiconductor region (10) is p-doped.
- 15 6. The optoelectronic sensor as claimed in one of claims  
1 to 5,  
wherein  
the collecting zones (20, 22) are diffused.
- 20 7. The optoelectronic sensor as claimed in one of claims  
1 to 5,  
wherein  
the collecting zones (20, 22) are produced by local  
charge transfers in the semiconductor region (10).
- 25 8. The optoelectronic sensor as claimed in one of claims  
1 to 7,  
wherein  
the collecting zones (20, 22) are formed as Schottky  
diodes.
- 30 9. The optoelectronic sensor as claimed in one of claims  
1 to 8,  
wherein  
in the semiconductor region (10), more than one  
35 collecting zone pair is embedded between two control

zones (32, 34) or two capacitive elements (35, 36; 37, 38).

10. A measuring device in particular for 3D distance  
5 measurement having  
at least one optoelectronic sensor as claimed in one  
of claims 1 to 9,  
an optical transmitter for generating a modulated  
photon flux having a predetermined phase,  
10 a device (60) for generating a control voltage, the  
phase of the control voltage being in a fixed  
relationship with the phase of the photon flux  
generated by the transmitter, and  
an evaluation device (40, 42) assigned to the  
15 collecting zones (20, 22) and serving for determining  
the amplitude and the phase of the modulated photon  
flux with respect to the phase of the control voltage.

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